Progress on the Implementation of IC 16-38-4-7 (Birth Problems Registry) as amended in First Regular Session 112th General Assembly (2001)
Reporting Period: July 2008 – June 2009

The Indiana Birth Defects and Problems Registry is a population-based surveillance system that seeks to promote fetal, infant, and child health. The purpose of the Registry is to prevent birth defects and childhood developmental disabilities and to enhance the quality of life of affected Indiana residents.

Birth defects are conditions present at birth that affect the structure or function of an infant's body. They can cause physical, mental, or medical problems. Approximately 1 in 33 babies is born with a major birth defect each year in the United States. Birth defects are the leading cause of death in infants. Birth defects also account for 30% of all pediatric hospital admissions (*National Vital Statistic Report*, vol. 52, 2003). Annual costs for birth defect-related conditions are nearly $2.5 billion (*Morbidity and Mortality Weekly Report*, January 19, 2007). Some of these causes are entirely preventable, while others could be identified early and treated or managed in order to improve the quality of life of affected infants and their families.

The 1986 Indiana General Assembly enacted a law (IC 16-4-10-6) to establish the Birth Problems Registry by January 1, 1987. In 2001, the Indiana Birth Problems Registry law (IC 16-38-4-7; 410 IAC 21-3) was amended to allow additional data sources to be used to improve the quality of the data. Data from the Indiana Birth Defects and Problems Registry will be used to detect trends in birth defects and suggest areas for further study; to identify epidemiological factors associated with birth defects; to address community concerns about the environmental effects on birth outcomes; to evaluate education, screening, and prevention programs; and to establish efficient referral systems that provide special services for the children with identified birth defects and their families.

Indiana State Department of Health staff obtained a three-year CDC Cooperative Agreement, a four-year Health Resource Service Administration (HRSA) Genetics Implementation Grant, a HRSA State Systems Development Initiative (SSDI), and HRSA's Title V Block Grant to fund the development of the enhanced IBDPR both programmatically and technically.

Case Ascertainment

The Indiana Birth Defects and Problems Registry (IBDPR) is considered a "passive" system because initial case ascertainment is through the electronic submission of hospital discharge data (HDD), with defined ICD-9-CM codes that identify birth defects and problems. However, in the early stages of program development, it was determined that up to 25% of the HDD was invalid. Therefore, the program protocol includes completing chart audits (which is indicative of an "active" birth defects registry) on the 44 CDC-targeted conditions to ensure the data submitted to the CDC is as valid as possible and to ensure that appropriate information is sent to families of children reported with at least one birth defect.

Hospital Reporting:

All 113 reporting hospitals are now submitting their monthly discharge data using the Indiana Health Data Center Gateway web portal. By the end of July 2009, 78 hospitals had completed reporting up to June 2009, 3 hospitals had reported up to May 2009, 4 hospitals up to March 2009, 2 hospitals up to December 2008, and 9 hospitals up to September 2008. Hospitals are required to report birth defects data to the IBDPR when they finish coding hospital discharge records for each month. The changes in data collection and recording systems and lack of resources, such as

medical records or information technology staff, have been presented as reasons for the delays or irregularities in data reporting.

Physician Reporting:

The IBDPR uses physician reporting to identify children with birth defects that may not be diagnosed at birth and may, therefore, be diagnosed in a doctor's office rather than a hospital. The IBDPR staff considers a physician's submission to be confirmation of a diagnosis. No chart auditing is done on charts in a physician's office. If the IBDPR has received duplicate information from a hospital and no chart audit has been completed, the physician's report will be confirmation of that birth defect and no chart audit will be done at the hospital. IBDPR staff expects that reports of children with autism and fetal alcohol spectrum disorder will be ascertained primarily from physician reporting, as the diagnostic criteria for both conditions include developmental delays that are not detectable at birth.

In the fall of 2008, IBDPR introduced the online Physician Reporting System to all physicians and psychologists who manage children from birth to 5 years of age. This new, more efficient reporting system was developed to replace the Teleforms-based reporting system implemented in 2004. IBDPR's goal was to create awareness of the new reporting method and to encourage relevant physicians and psychologists to register in the web-based system to report to ISDH by the end of spring of 2009. As of October 5, 2009, 22 health care providers or office managers, representing 33 individual health care providers, have registered to use the online Physician Reporting System.

In the past, any announcements of legislative changes or reporting requirements were sent to appropriate health care providers by mailing information packets to them. Due to insufficient funding to reach approximately 6,000 health care providers in September 2008, IBDPR decided to publish an announcement of the new Physician Reporting System within the newsletters of the Indiana State Medical Association (ISMA), Indiana Academy of Family Physicians (IAFP), Indiana Academy of Pediatrics (IAP), and Indiana Psychology Association (IPA). This announcement contained a brief introduction of the IBDPR and registration instructions for the ISDH Gateway Web Application and IBDPR Physician Reporting System.

In recognition of "Birth Defects Awareness Month" and to promote the awareness of the new online Physician Reporting Method, an article was published in the ISMA, IAFP, IAP, IPA, and Indiana Psychiatric Society (IPS) newsletters in January 2009.

During this reporting period (July 2008 – June 2009), 272 children with birth defects were reported by 22 physicians and 18 children were reported by 4 psychologists. From January through June of 2009, 199 reports were received by the online Physician Reporting System. No physician reports have been received via the Teleforms system since May 2009.

Application Development

In the spring of 2009, the data transition from the Operational Data Store (ODS) to Integrated Data System (IDS) was completed. The IDS was developed to improve the data quality and integrity of the ODS. The IDS also provides data auditing capabilities and enhanced data management. As a result of this transition and subsequent system modifications, more accurate birth defects data is now available, compared to previous years. Some of the ODS-based applications are no longer available due to this transition. IDS developers are working to develop new applications to analyze birth defects data collected from statewide hospitals and health care providers.

The six-month web-based physician reporting pilot project, involving five physicians, was a success. Therefore, as stated earlier, IBDPR staff introduced the web-based Physician Reporting System (accessible via ISDH Gateway) to statewide physicians in the fall of 2008.

Program Development

The goals of the program are to improve the quality of the data available on birth defects in Indiana and to provide information related to understanding the birth defect(s) and available resources to families of children with confirmed birth defects, as well as their health care providers.

Each time a change occurs within the rules regarding case ascertainment, IBDPR staff has ensured that all appropriate personnel, including health care providers and birthing facility staff, have received notification of the legislative change.

Due to the data transition from the ODS to the IDS, IBDPR staff postponed implementing the mailing of educational information and resource packets to parents or guardians of children with at least one confirmed birth defect. When the electronic application to send these packets is implemented, IBDPR staff will begin sending packets to the families of children with at least one confirmed birth defect who were born in 2008 or later. The effectiveness of these mailings will be evaluated once the program is fully functioning.

National Meetings Attended

The Centers for Disease Control and Prevention (CDC) offered one IBDPR staff member complete funding to attend the 12th annual meeting of the National Birth Defects Prevention Network (NBDPN) in Nashville, Tennessee, in February 2009. This funding was not utilized, as the state travel committee was not approving out-of-state travel at that time. This conference was designed to enhance relationships between federal, state, and professional organizations that are working toward common goals and also to provide an opportunity to discuss successful efforts related to reducing and preventing birth defects.

Statute Requisites

As the IBDPR collects data daily on children from birth to three or five years of age, the same report for the same time period, compiled on different dates, may indicate different values. The data for this report was compiled on 08/07/2009. Due to the small numbers of birth defects per year, data will be grouped in multiple years, as is required by CDC for the national publication. This report includes Indiana data available during the following four years: 2003, 2004, 2005 and 2006. According to Vital Records data, there were 348,478 live births in Indiana from 2003 through 2006.

1) The numbers and types of birth problems occurring in Indiana by county:
The data presented in Tables 1 – 3 were obtained by the data files submitted to the IBDPR by statewide hospitals as required by the Birth Problems Registry law (IC 16-38-4-7; 410 IAC 21-3). The hospitals extract this data from their hospital discharge (UB-92) records.

To verify the accuracy of hospital discharge data, the IBDPR targets 46 specific birth defects from the list of reported conditions for chart auditing by ISDH staff/contractors. These 46 defects are recommended by the National Birth Defects Prevention Network and are published for most states annually in *Birth Defects Research Part A: Clinical and Molecular Teratology*. IBDPR chart auditors visit hospitals and review the medical records of children that have been reported to the

IBDPR with one or more targeted conditions in order to confirm the conditions or to determine them as probable (Table 5).

About 52% of the birth defects reported through hospital discharge data were determined to be confirmed conditions based on medical chart audits for 2003 – 2006 births. Of the targeted birth defects reported and confirmed, approximately 82% occurred in non-Hispanic white children, 10% in non-Hispanic black children, 7% in Hispanic children, 1% in Asian children, and < 1% each in children of American Indian descent or other races/ethnicities.

The following explains the attached tables:

Table 1 shows the number of children reported by the hospitals through ICD-9-CM codes at discharge for each reportable condition category. These are unduplicated children for each condition category. However, many children with birth defects or problems have more than one defect, so some children may be included in multiple condition categories. These numbers do not reflect confirmation of the defect, merely hospital reporting.

Table 2 shows the number of children reported with only one reportable condition and Table 3 shows the number of children reported with more than one reportable condition; the count is unduplicated by condition category. These tables are subsets of Table 1 and, again, do not reflect whether there is a confirmed diagnosis that supports the discharge code.

Tables 4A and 4B reflect the sources of case ascertainment for the targeted conditions and non-targeted reportable conditions. According to these tables, 13% of occurrences of autism, 31% of fetal alcohol syndrome (FAS), and 26% of autism spectrum and other pervasive developmental disorders were reported to the IBDPR only via physician reporting. Therefore, direct physician reports are imperative for accurate reporting of the prevalence of these conditions, as they are not commonly diagnosed at hospitals.

Table 5 reflects the targeted condition categories reported to the IBDPR by hospital discharge data for children born in 2003 – 2006, where the condition was determined to be confirmed or probable, based on information obtained during the chart audit. A "probable" condition is one that has been audited, where the criteria for confirmation was adequate enough to determine the condition to be likely, but not enough to confidently confirm the condition. The percentage of confirmed vs. reported conditions reflects the validity of the hospital discharge data reported by the hospitals. Approximately 52% of all targeted conditions reported for live births during the four-year period were determined to be probable or confirmed based on information obtained during chart audits. This is a drop of 3% from last year's value, which was the result from three years of available data.

Less than 50% of all reported autism and related pervasive developmental disorders, cardiovascular anomalies, and eye anomalies were confirmed. When more than 5 years' data is available for review, IBDPR staff will be able to identify the specific conditions that are accurately reported through hospital discharge data. The ICD-9-CM codes listed on hospital discharges often represent conditions that may possibly be present, but require additional testing or information to accurately confirm or rule out.

Table 6 provides the counts and rates (by race, per 10,000 births) of confirmed and probable targeted conditions for Indiana children born between 2003 and 2006 who have been reported to the IBDPR. Conditions determined to be "probable" are included with the confirmed conditions for counts and rates. The overall rate of 279 per 10,000 births is within national estimates.

Table 7 indicates trisomy counts and rates of infants born in 2003 – 2006 by maternal age. Children with trisomy conditions have three, rather than the expected two, copies of a chromosome—for example, children born with a third copy of chromosome 21 have Down syndrome, also called trisomy 21.

Table 8 shows the counts and rates per 10,000 births of confirmed and probable targeted birth defect conditions for Indiana children born between 2003 and 2006 for each county in Indiana. Any count that is less than five (5), either for the entire county or for a specific birth defect, is indicated as "less than reportable numbers" (symbolized by an asterisk, "*").

2) The amount of use of the birth problems registry by researchers:
Annual Indiana data of the 2003 – 2006 births (Table 6) was submitted to the National Birth Defects Prevention Network (NBDPN) in August 2009; this data will be published in *Birth Defects Research Part A: Clinical and Molecular Teratology* in December 2009. The IBDPR did not receive any other data requests from researches within this fiscal year. The data will be most useful for research and analysis when several years of data are available.

3) Proposals for the prevention of birth problems occurring in Indiana:
Currently, the IBDPR contains four years' worth of information on birth defect rates within the state. This amount of information is not enough to allow IBDPR staff to accurately evaluate the presence of trends and/or clusters and, therefore, the need for specific prevention campaigns. In April 2008, a full-time epidemiologist joined the ISDH Maternal and Child Health (MCH) staff; the MCH Epidemiologist will work with IBDPR staff to review new IBDPR data at the earliest opportunity.

Curricula related to education and prevention of fetal alcohol syndrome (FAS) and the benefits of folic acid were developed and distributed to middle school and high school consumer family sciences and biology teachers during this fiscal year. This information was presented at the annual Hoosier Association of Science Teachers, Inc. (HASTI) conference in February 2009; the ISDH intends to present this information again at the 2010 HASTI conference. IBDPR staff members are requesting and collecting feedback based on the teachers' use of this information, and intends to evaluate the effectiveness of the curricula at the earliest opportunity.

Table 1: Number of Children* Reported** to IBDPR by Birth Year

Condition Name / Category	ICD-9-CM Codes	2003	2004	2005	2006
Acute myelofibrosis	289.8				1
Adenoma of lung bronchus	212.3		1	1	1
Anomalies of jaw	524.00-254.10	52	61	57	65
Anterior horn cell disease	335.00-335.99	4	8	3	3
Autism, Childhood disintegrative disorder, Aspergers, Rett syndrome, and Pervasive developmental disorders not otherwise specified	299.00-299.99	295	234	171	79
Cardiovascular anomalies	745.00-747.99	1734	1948	2062	2120
Central nervous system anomalies	740.00-742.99	358	334	377	387
Cerebral degenerations usually manifest in childhood	330.00-330.99	11	7	5	4
Chromosomal anomalies	758.00-758.99	191	200	206	229
Cleft palate and cleft lip	749.00-749.99	143	174	153	162
Coagulation defects	286.00-286.50	33	30	29	28
Congenital anomalies of integument	757.00-757.99	350	701	1113	1605
Congenital nystagmus	379.51	6	3	10	7
Constitutional aplastic anemia	284	1	1	1	
Diabetes mellitus	250.00-250.99	175	167	160	169
Diseases of white blood cells	288.00-288.99	663	756	779	714
Disorders involving the immune mechanism	279.00-279.99	63	62	75	57
Dyshormonogenic goiter	246.1	2			
Ear, face and neck anomalies	744.00-744.99	198	207	206	220
Eye anomalies	743.00-743.99	240	213	223	215
Fetal alcohol syndrome	760.71	31	32	23	23
Gastrointestinal anomalies	750.30-751.99	354	454	455	519
Genitourinary anomalies	752.00-753.99	1252	1451	1474	1465
Hereditary hemolytic anemias	282.00-282.99	126	164	161	171
Hereditary retinal dystrophies	362.7			1	
Mesothelioma of peritoneum	211.8		1		
Muscular dystropies and myopathies	359.00-359.99	16	25	29	26
Musculoskeletal anomalies	754.00-756.99	1555	1732	1823	1781
Neoplasms of lip	140.00-208.99	114	118	126	115
Neoplasms of skin	216.00-216.99	136	133	146	135
Neoplasms-other	230.00-239.99	71	53	105	107
Other congenital anomalies	759.00-759.99	208	210	245	255
Other testicular dysfunction	257.8		1	1	1
Primary thrombocytopenia	287.3	33	30	8	2
Respiratory system anomalies	748.00-748.99	298	353	365	421
Retrolental fibroplasia	362.21	155	148	154	179
Strabismus and other disorders of binocular eye movement	378.00-378.99	113	107	114	76
Upper alimentary tract anomalies	750.00-750.29	363	389	373	424
Waldenstroms macroglobulinemia	273.3		1	1	1

*Whose mothers were Indiana residents at the time of child's birth

**Includes hospital discharge data and physician reports

Data compiled on 08/14/2009.

Table 2: Number of Children* Reported ** to IBDPR with Only One Reportable Condition by Birth Year

Condition Name / Category	ICD-9-CM Codes	2003	2004	2005	2006
Anomalies of jaw	524.00-254.10	9	15	6	11
Anterior horn cell disease	335.00-335.99	1	2	3	1
Autism, Childhood disintegrative disorder, Aspergers, Rett syndrome, and Pervasive developmental disorders not otherwise specified	299.00-299.99	183	145	118	45
Cardiovascular anomalies	745.00-747.99	692	797	895	883
Central nervous system anomalies	740.00-742.99	119	136	146	139
Cerebral degenerations usually manifest in childhood	330.00-330.99	1	1	4	
Chromosomal anomalies	758.00-758.99	35	30	43	41
Cleft palate and cleft lip	749.00-749.99	51	48	42	58
Coagulation defects	286.00-286.50	18	16	13	10
Congenital anomalies of integument	757.00-757.99	274	579	960	1316
Congenital nystagmus	379.51	3	1	6	3
Diabetes mellitus	250.00-250.99	117	104	109	117
Diseases of white blood cells	288.00-288.99	499	525	558	481
Disorders involving the immune mechanism	279.00-279.99	24	19	32	18
Dyshormonogenic goiter	246.1	2			
Ear, face and neck anomalies	744.00-744.99	115	114	109	104
Eye anomalies	743.00-743.99	172	157	142	138
Fetal alcohol syndrome	760.71	15	13	6	8
Gastrointestinal anomalies	750.30-751.99	239	297	274	330
Genitourinary anomalies	752.00-753.99	876	979	983	964
Hereditary hemolytic anemias	282.00-282.99	93	104	108	115
Mesothelioma of peritoneum	211.8		1		
Muscular dystropies and myopathies	359.00-359.99	7	9	5	5
Musculoskeletal anomalies	754.00-756.99	1035	1119	1179	1115
Neoplasms of lip	140.00-208.99	36	36	32	47
Neoplasms of skin	216.00-216.99	104	104	110	98
Neoplasms-other	230.00-239.99	32	26	46	44
Other congenital anomalies	759.00-759.99	57	47	69	71
Other testicular dysfunction	257.8		1		1
Primary thrombocytopenia	287.3	14	11	4	
Respiratory system anomalies	748.00-748.99	122	139	133	185
Retrolental fibroplasia	362.21	45	52	46	68
Strabismus and other disorders of binocular eye movement	378.00-378.99	57	56	50	36
Upper alimentary tract anomalies	750.00-750.29	288	304	280	350
Waldenstroms macroglobulinemia	273.3		1	1	1

*Whose mothers were Indiana residents at the time of child's birth

**Includes hospital discharge data and physician reports

Data compiled on 08/14/2009.

Table 3: Number of Children* Reported to IBDPR with More Than One Reportable Condition by Birth Year**

Condition Name / Category	ICD-9-CM Codes	2003	2004	2005	2006
Acute myelofibrosis	289.8				1
Adenoma of lung bronchus	212.3		1	1	1
Anomalies of jaw	524.00-254.10	43	46	51	54
Anterior horn cell disease	335.00-335.99	3	6		2
Autism, Childhood disintegrative disorder, Aspergers, Rett syndrome, and Pervasive developmental disorders not otherwise specified	299.00-299.99	112	89	53	34
Cardiovascular anomalies	745.00-747.99	1042	1151	1167	1237
Central nervous system anomalies	740.00-742.99	239	198	231	248
Cerebral degenerations usually manifest in childhood	330.00-330.99	10	6	1	4
Chromosomal anomalies	758.00-758.99	156	170	163	188
Cleft palate and cleft lip	749.00-749.99	92	126	111	104
Coagulation defects	286.00-286.50	15	14	16	18
Congenital anomalies of integument	757.00-757.99	76	122	153	289
Congenital nystagmus	379.51	3	2	4	4
Constitutional aplastic anemia	284	1	1	1	
Diabetes mellitus	250.00-250.99	58	63	51	52
Diseases of white blood cells	288.00-288.99	164	231	221	233
Disorders involving the immune mechanism	279.00-279.99	39	43	43	39
Ear, face and neck anomalies	744.00-744.99	83	93	97	116
Eye anomalies	743.00-743.99	68	56	81	77
Fetal alcohol syndrome	760.71	16	19	17	15
Gastrointestinal anomalies	750.30-751.99	115	157	181	189
Genitourinary anomalies	752.00-753.99	376	472	491	501
Hereditary hemolytic anemias	282.00-282.99	33	60	53	56
Hereditary retinal dystrophies	362.7			1	
Muscular dystropies and myopathies	359.00-359.99	9	16	24	21
Musculoskeletal anomalies	754.00-756.99	520	613	644	666
Neoplasms of lip	140.00-208.99	78	82	94	68
Neoplasms of skin	216.00-216.99	32	29	36	37
Neoplasms-other	230.00-239.99	39	27	59	63
Other congenital anomalies	759.00-759.99	151	163	176	184
Other testicular dysfunction	257.8			1	
Primary thrombocytopenia	287.3	19	19	4	2
Respiratory system anomalies	748.00-748.99	176	214	232	236
Retrolental fibroplasia	362.21	110	96	108	111
Strabismus and other disorders of binocular eye movement	378.00-378.99	56	51	64	40
Upper alimentary tract anomalies	750.00-750.29	75	85	93	74

*Whose mothers were Indiana residents at the time of child's birth

**Includes hospital discharge data and physician reports

Data compiled on 08/14/2009.

Table 4A: Sources of Case Ascertainment Data for Targeted Conditions of 2003 - 2006 Births to Indiana Women

Condition Name / Category	Reported by Physician Only	Reported by Hospital Only	Reported by Physician and Hospital	Total
Anencephalus	0	31	0	31
Aniridia	0	6	0	6
Anomalies of the ear causing impairment of hearing	1	0	0	1
Anophthalmia/microphthalmia	3	55	0	58
Anotia/microtia	3	21	1	25
Aortic valve stenosis	0	106	0	106
Atrial septal defect	5	3835	5	3845
Atrioventricular septal defect	2	235	1	238
Autism	74	469	49	592
Biliary atresia	0	38	1	39
Bladder exstrophy	0	7	0	7
Choanal atresia	0	71	0	71
Cleft lip with and without cleft palate	16	553	8	577
Cleft palate without cleft lip	4	417	14	435
Coarctation of aorta	4	314	2	320
Common truncus	0	22	0	22
Congenital cataract	2	39	1	42
Congenital hip dislocation	0	515	0	515
Diaphragmatic hernia	3	117	0	120
Down syndrome	6	465	45	516
Ebstein anomaly	0	32	0	32
Encephalocele	1	37	0	38
Epispadius	0	25	0	25
Esophageal atresia/tracheoesophageal fistula	1	86	1	88
Fetus or newborn affected by maternal alcohol use	34	61	14	109
Gastroschisis	0	138	0	138
Hirschsprung's disease (congenital megacolon)	1	106	1	108
Hydrocephalus without Spina Bifida	4	268	4	276
Hypoplastic left heart syndrome	0	102	0	102
Hypospadias	5	1365	8	1378
Microcephalus	33	494	21	548
Obstructive genitourinary defect	0	105	0	1076
Omphalocele	0	30	0	30
Patent ductus arteriosus	5	2872	2	2879
Pulmonary valve atresia and stenosis	6	555	2	563
Pyloric stenosis	0	972	0	972
Rectal and large intestinal atresia/stenosis	0	140	6	146
Reduction deformity, lower limbs	3	75	3	81
Reduction deformity, upper limbs	10	105	2	117
Renal agenesis/hypoplasia	1	122	3	126
Spina bifida without anencephalus	9	310	8	327
Tetralogy of fallot	2	157	2	161
Transposition of great arteries	0	242	1	243
Tricuspid valve atresia and stenosis	0	45	0	45
Trisomy 13 (Patau syndrome)	2	39	2	43
Trisomy 18 (Edwards syndrome)	1	45	4	50
Ventricular septal defect	8	1742	5	1755

Data compiled on 08/14/2009.

Table 4B: Sources of Case Ascertainment Data for Reportable Conditions* of 2003 - 2006 Births to Indiana Women

Condition Name / Category	Reported by Physician Only	Reported by Hospital Only	Reported by Physician and Hospital	Total
Acute myelofibrosis	1	0	0	1
Adenoma of lung bronchus	0	3	0	3
Anomalies of jaw	6	264	2	272
Anterior horn cell disease	0	19	0	19
Autism, Childhood disintegrative disorder, Aspergers, Rett syndrome, and Pervasive developmental disorders not otherwise specified	71	194	9	274
Cardiovascular anomalies	25	4146	8	4179
Central nervous system anomalies	13	673	5	691
Cerebral degenerations usually manifest in childhood	1	26	1	28
Chromosomal anomalies	52	353	15	420
Coagulation defects	0	153	1	154
Congenital anomalies of integument	8	3884	5	3897
Congenital nystagmus	0	26	0	26
Constitutional aplastic anemia	0	3	0	3
Diabetes mellitus	1	814	0	815
Diseases of white blood cells	0	3080	0	3080
Disorders involving the immune mechanism	0	306	1	307
Dyshormonogenic goiter	0	2	0	2
Ear, face and neck anomalies	6	889	1	896
Eye anomalies	10	827	1	838
Gastrointestinal anomalies	2	591	1	594
Genitourinary anomalies	13	4040	4	4057
Hereditary hemolytic anemias	1	741	0	742
Hereditary retinal dystrophies	0	1	0	1
Mesothelioma of peritoneum	0	1	0	1
Muscular dystropies and myopathies	5	115	0	120
Musculoskeletal anomalies	87	7219	51	7357
Neoplasms of lip	3	922	1	926
Neoplasms of skin	1	585	0	586
Neoplasms-other	4	366	2	372
Other congenital anomalies	55	929	25	1009
Other testicular dysfunction	0	3	0	3
Primary thrombocytopenia	0	73	0	73
Respiratory system anomalies	9	1437	4	1450
Retrolental fibroplasia	0	636	0	636
Strabismus and other disorders of binocular eye movement	7	453	0	460
Upper alimentary tract anomalies	9	1549	0	1558
Waldenstroms macroglobulinemia	0	3	0	3

*Excludes targeted conditions
Data compiled on 08/14/2009.

Table 5: Targeted Conditions Reported to IBDPR via Hospital Discharge Data for Children Born in 2003 - 2006 which are Confirmed or Determined as Probable by Medical Chart Audits or Physician Reports

Condition Name / Category	Codes	Number of Children Reported	Targeted Conditions Reported	Conditions per Child	Conditions Confirmed / Probable	Confirmed / Probable Percentage
Autism, Childhood disintegrative disorder, Aspergers, Rett syndrome, and Pervasive developmental disorders not otherwise specified	299.00-299.99	514	518	1	244	47.10%
Cardiovascular anomalies	745.00-747.99	6579	10279	2	4335	42.17%
Central nervous system anomalies	740.00-742.99	977	1173	1	630	53.71%
Chromosomal anomalies	758.00-758.99	543	600	1	431	71.83%
Cleft palate and cleft lip	749.00-749.99	629	992	2	569	57.36%
Ear, face and neck anomalies	744.00-744.99	22	22	1	14	63.64%
Eye anomalies	743.00-743.99	95	101	1	49	48.51%
Fetal alcohol syndrome	760.71	75	75	1	59	78.67%
Gastrointestinal anomalies	750.30-751.99	1321	1351	1	1037	76.76%
Genitourinary anomalies	752.00-753.99	2545	2606	1	1771	67.96%
Musculoskeletal anomalies	754.00-756.99	895	985	1	531	53.91%
Respiratory system anomalies	748.00-748.99	71	71	1	41	57.75%

Data compiled on 08/14/2009.

Table 6: Confirmed and Probable Counts and Rates by Race of the Targeted Conditions for 2003 - 2006 Births to Indiana Women
(Rates per 10,000 live births displayed in shaded area.)

Defect	Non-Hispanic White	Non-Hispanic Black	Hispanic	Asian or Pacific Islander	American Indian or Alaskan Native	Other / Unknown	Total
Anencephalus	9	1	2	0	0	1	13
	0.34	0.22	0.66	0	0	5.71	0.37
Aniridia	4	1	0	0	0	0	5
	0.15	0.22	0	0	0	0	0.14
Anophthalmia/microphthalmia	18	3	2	0	0	0	23
	0.68	0.66	0.66	0	0	0	0.66
Anotia/microtia	12	0	4	1	0	0	17
	0.45	0	1.31	1.90	0	0	0.49
Aortic valve stenosis	55	2	1	0	0	1	59
	2.08	0.44	0.33	0	0	5.71	1.69
Atrial septal defect	1006	135	70	17	1	6	1235
	38.01	29.73	22.93	32.28	12.02	34.27	35.44
Atrioventricular septal defect	122	12	9	1	1	1	146
	4.61	2.64	2.95	1.90	12.02	5.71	4.19
Autism	254	16	16	1	1	0	288
	9.60	3.52	5.24	1.90	12.02	0	8.26
Biliary atresia	21	6	5	0	0	0	32
	0.79	1.32	1.64	0	0	0	0.92
Bladder exstrophy	3	0	0	2	0	0	5
	0.11	0	0	3.80	0	0	0.14
Choanal atresia	32	5	4	0	0	0	41
	1.21	1.10	1.31	0	0	0	1.18
Cleft lip with and without cleft palate	255	15	34	9	0	2	315
	9.63	3.30	11.14	17.09	0	11.42	9.04
Cleft palate without cleft lip	191	20	12	1	0	0	224
	7.22	4.40	3.93	1.90	0	0	6.43
Coarctation of aorta	189	17	16	1	0	2	225
	7.14	3.74	5.24	1.90	0	11.42	6.46
Common truncus	13	2	1	1	0	0	17
	0.49	0.44	0.33	1.90	0	0	0.49
Congenital cataract	19	3	3	0	0	1	26
	0.72	0.66	0.98	0	0	5.71	0.75
Congenital hip dislocation	166	8	25	1	0	1	201
	6.27	1.76	8.19	1.90	0	5.71	5.77
Diaphragmatic hernia	78	6	5	1	0	0	90
	2.95	1.32	1.64	1.90	0	0	2.58
Down syndrome	306	32	27	6	0	2	373
	11.56	7.05	8.85	11.39	0	11.42	10.70
Ebstein anomaly	20	2	3	0	0	0	25
	0.76	0.44	0.98	0	0	0	0.72
Encephalocele	13	2	4	0	0	0	19
	0.49	0.44	1.31	0	0	0	0.55

Note 1—Rates based on fewer than 20 cases are unstable and are not comparable.
Note 2—Race is assigned to the child based on the mother's reporting about herself.
Data compiled on 08/14/2009.

Table 6: Confirmed and Probable Counts and Rates by Race of the Targeted Conditions for 2003 - 2006 Births to Indiana Women
(Rates per 10,000 live births displayed in shaded area.)

Defect	Non-Hispanic White	Non-Hispanic Black	Hispanic	Asian or Pacific Islander	American Indian or Alaskan Native	Other / Unknown	Total
Epispadius	10	1	0	0	0	0	11
	0.38	0.22	0	0	0	0	0.32
Esophageal atresia/tracheoesophageal fistula	53	9	4	1	0	0	67
	2	1.98	1.31	1.90	0	0	1.92
Fetus or newborn affected by maternal alcohol use	73	18	2	0	0	0	93
	2.76	3.96	0.66	0	0	0	2.67
Gastroschisis	82	4	11	0	0	0	97
	3.10	0.88	3.60	0	0	0	2.78
Hirschsprung's disease (congenital megacolon)	59	9	1	1	0	0	70
	2.23	1.98	0.33	1.90	0	0	2.01
Hydrocephalus without Spina Bifida	141	31	12	2	0	0	186
	5.33	6.83	3.93	3.80	0	0	5.34
Hypoplastic left heart syndrome	56	6	3	1	0	1	67
	2.12	1.32	0.98	1.90	0	5.71	1.92
Hypospadias	836	106	27	6	0	3	978
	31.58	23.34	8.85	11.39	0	17.13	28.06
Microcephalus	204	38	25	5	0	1	273
	7.71	8.37	8.19	9.49	0	5.71	7.83
Obstructive genitourinary defect	588	55	42	10	2	3	700
	22.21	12.11	13.76	18.99	24.04	17.13	20.09
Omphalocele	21	5	4	0	0	0	30
	0.79	1.10	1.31	0	0	0	0.86
Patent ductus arteriosus	501	95	42	6	1	6	651
	18.93	20.92	13.76	11.39	12.02	34.27	18.68
Pulmonary valve atresia and stenosis	256	39	20	6	1	1	323
	9.67	8.59	6.55	11.39	12.02	5.71	9.27
Pyloric stenosis	647	36	66	0	3	4	756
	24.44	7.93	21.62	0	36.06	22.84	21.69
Rectal and large intestinal atresia/stenosis	98	10	2	3	0	0	113
	3.70	2.20	0.66	5.70	0	0	3.24
Reduction deformity, lower limbs	27	8	2	0	0	0	37
	1.02	1.76	0.66	0	0	0	1.06

Note 1—Rates based on fewer than 20 cases are unstable and are not comparable.
Note 2—Race is assigned to the child based on the mother's reporting about herself.
Data compiled on 08/14/2009.

Table 6: Confirmed and Probable Counts and Rates by Race of the Targeted Conditions for 2003 - 2006 Births to Indiana Women
(Rates per 10,000 live births displayed in shaded area.)

Defect	Non-Hispanic White	Non-Hispanic Black	Hispanic	Asian or Pacific Islander	American Indian or Alaskan Native	Other / Unknown	Total
Reduction deformity, upper limbs	71	8	7	1	0	0	87
	2.68	1.76	2.29	1.90	0	0	2.50
Renal agenesis/hypoplasia	69	5	6	1	1	0	82
	2.61	1.10	1.97	1.90	12.02	0	2.35
Spina bifida without anencephalus	106	12	21	2	0	0	141
	4	2.64	6.88	3.80	0	0	4.05
Tetralogy of fallot	88	19	8	1	0	0	116
	3.32	4.18	2.62	1.90	0	0	3.33
Transposition of great arteries	134	13	14	2	0	1	164
	5.06	2.86	4.59	3.80	0	5.71	4.71
Tricuspid valve atresia and stenosis	28	3	1	0	0	0	32
	1.06	0.66	0.33	0	0	0	0.92
Trisomy 13 (Patau syndrome)	17	3	5	1	0	0	26
	0.64	0.66	1.64	1.90	0	0	0.75
Trisomy 18 (Edwards syndrome)	20	7	2	1	2	0	32
	0.76	1.54	0.66	1.90	24.04	0	0.92
Ventricular septal defect	988	106	101	24	3	2	1224
	37.33	23.34	33.09	45.58	36.06	11.42	35.12
All Defects	7959	934	671	116	16	39	9735
	300.68	205.70	219.84	220.28	192.31	222.73	279.36

Note 1—Rates based on fewer than 20 cases are unstable and are not comparable.
Note 2—Race is assigned to the child based on the mother's reporting about herself.
Data compiled on 08/14/2009.

Table 7: Confirmed and Probable Counts and Rates of Trisomy by Maternal Age for 2003 - 2006 Births to Indiana Women
(Rates per 10,000 live births displayed in the shaded area.)

Defect	<35	>= 35	total
Down syndrome	218	155	373
	6.98	42.95	10.70
Trisomy 13 (Patau syndrome)	16	10	26
	0.51	2.77	0.75
Trisomy 18 (Edwards syndrome)	16	16	32
	0.51	4.43	0.92
	312391	36087	348478

Note—Rates based on fewer than 20 cases are unstable and are not comparable.
Data compiled on 08/14/2009.

Table 8: Indiana Confirmed and Probable Counts and Rates of the Targeted Conditions for 2003 - 2006
Births to Indiana Women by County (rates per 10,000 births)

County	Live Births		
Defect		**Total**	**Rate**
ADAMS	**2531**		
Atrial septal defect		14	55.31
Biliary atresia		*	
Cleft lip with and without cleft palate		*	
Cleft palate without cleft lip		*	
Coarctation of aorta		*	
Common truncus		*	
Congenital hip dislocation		*	
Diaphragmatic hernia		*	
Down syndrome		*	
Hirschsprung's disease (congenital megacolon)		*	
Hydrocephalus without Spina Bifida		*	
Hypospadias		8	31.61
Microcephalus		*	
Patent ductus arteriosus		*	
Pyloric stenosis		*	
Spina bifida without anencephalus		*	
Tetralogy of fallot		*	
Transposition of great arteries		*	
Tricuspid valve atresia and stenosis		*	
Trisomy 13 (Patau syndrome)		*	
Trisomy 18 (Edwards syndrome)		*	
Ventricular septal defect		12	47.41
All defects		**72**	
BLACKFORD	**601**		
Aortic valve stenosis		*	
Atrial septal defect		*	
Autism		*	
Cleft lip with and without cleft palate		*	
Congenital hip dislocation		*	
Microcephalus		*	
Pyloric stenosis		*	
Renal agenesis/hypoplasia		*	
Ventricular septal defect		7	116.47
All defects		**23**	
BENTON	**476**		
Atrial septal defect		*	
Autism		*	
Cleft lip with and without cleft palate		*	
Hypospadias		*	
Obstructive genitourinary defect		*	
Pyloric stenosis		*	
Renal agenesis/hypoplasia		*	
Spina bifida without anencephalus		*	
Ventricular septal defect		*	
All defects		**11**	

County	Live Births		
Defect		**Total**	**Rate**
ALLEN	**21280**		
Aniridia		*	
Anophthalmia/microphthalmia		*	
Anotia/microtia		*	
Aortic valve stenosis		8	3.76
Atrial septal defect		251	117.95
Atrioventricular septal defect		10	4.70
Autism		37	17.39
Biliary atresia		*	
Choanal atresia		*	
Cleft lip with and without cleft palate		28	13.16
Cleft palate without cleft lip		25	11.75
Coarctation of aorta		17	7.99
Congenital cataract		*	
Congenital hip dislocation		7	3.29
Diaphragmatic hernia		*	
Down syndrome		19	8.93
Ebstein anomaly		5	2.35
Encephalocele		*	
Esophageal atresia/tracheoesophageal fistula		*	
Fetus or newborn affected by maternal alcohol use		22	10.34
Hirschsprung's disease (congenital megacolon)		*	
Hydrocephalus without Spina Bifida		20	9.40
Hypoplastic left heart syndrome		*	
Hypospadias		73	34.30
Microcephalus		48	22.56
Obstructive genitourinary defect		24	11.28
Patent ductus arteriosus		80	37.59
Pulmonary valve atresia and stenosis		52	24.44
Pyloric stenosis		50	23.50
Rectal and large intestinal atresia/stenosis		9	4.23
Reduction deformity, lower limbs		*	
Reduction deformity, upper limbs		6	2.82
Renal agenesis/hypoplasia		*	
Spina bifida without anencephalus		11	5.17
Tetralogy of fallot		8	3.76
Transposition of great arteries		11	5.17
Tricuspid valve atresia and stenosis		*	
Trisomy 13 (Patau syndrome)		*	
Trisomy 18 (Edwards syndrome)		*	
Ventricular septal defect		129	60.62
All defects		**983**	

BOONE	**2710**	
Aniridia	*	
Atrial septal defect	13	47.97
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	5	18.45
Congenital hip dislocation	*	
Hypoplastic left heart syndrome	*	
Hypospadias	8	29.52
Microcephalus	*	
Obstructive genitourinary defect	11	40.59
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	7	25.83
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	12	44.28
All defects	**80**	

BARTHOLOMEW	**4223**	
Atrial septal defect	10	23.68
Atrioventricular septal defect	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	6	14.21
Common truncus	*	
Congenital hip dislocation	*	
Down syndrome	6	14.21
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	*	
Microcephalus	5	11.84
Obstructive genitourinary defect	9	21.31
Patent ductus arteriosus	5	11.84
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	7	16.58
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	13	30.78
All defects	**84**	

BROWN	**457**	
Atrial septal defect	*	
Obstructive genitourinary defect	*	
Pulmonary valve atresia and stenosis	*	
Spina bifida without anencephalus	*	
All defects	**6**	

CLINTON	**2033**	
Atrial septal defect	7	34.43
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Common truncus	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	6	29.51
Transposition of great arteries	*	
Ventricular septal defect	8	39.35
All defects	**43**	

CARROLL	**908**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Biliary atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**33**	

CASS	**2256**	
Atrial septal defect	10	44.33
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital cataract	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	6	26.60
Ebstein anomaly	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypoplastic left heart syndrome	*	
Hypospadias	6	26.60
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	9	39.89
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	8	35.46
All defects	**80**	

DECATUR	**1464**	
Atrial septal defect	5	34.15
Atrioventricular septal defect	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	8	54.64
Rectal and large intestinal atresia/stenosis	*	
Renal agenesis/hypoplasia	*	
Ventricular septal defect	*	
All defects	**32**	

CLAY	**1385**	
Atrial septal defect	*	
Autism	*	
Biliary atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital cataract	*	
Down syndrome	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	6	43.32
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	7	50.54
Rectal and large intestinal atresia/stenosis	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Trisomy 13 (Patau syndrome)	*	
Ventricular septal defect	*	
All defects	**50**	

CLARK	**5508**	
Atrial septal defect	9	16.34
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	6	10.89
Fetus or newborn affected by maternal alcohol use	*	
Gastroschisis	*	
Hypospadias	10	18.16
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	7	12.71
Rectal and large intestinal atresia/stenosis	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Ventricular septal defect	37	67.18
All defects	**94**	

CRAWFORD	**513**	
	*	

DAVIESS	**2023**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Congenital cataract	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Encephalocele	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hypospadias	5	24.72
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	*	
All defects	**37**	

DEKALB	**2243**	
Atrial septal defect	19	84.71
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	7	31.21
Microcephalus	5	22.29
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	5	22.29
Pyloric stenosis	6	26.75
Rectal and large intestinal atresia/stenosis	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	*	
All defects	**88**	

DELAWARE	**5177**	
Anophthalmia/microphthalmia	*	
Atrial septal defect	44	84.99
Autism	10	19.32
Cleft lip with and without cleft palate	5	9.66
Cleft palate without cleft lip	7	13.52
Coarctation of aorta	*	
Common truncus	*	
Congenital hip dislocation	6	11.59
Down syndrome	5	9.66
Ebstein anomaly	*	
Encephalocele	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	5	9.66
Hypospadias	23	44.43
Microcephalus	9	17.38
Obstructive genitourinary defect	33	63.74
Patent ductus arteriosus	17	32.84
Pulmonary valve atresia and stenosis	5	9.66
Pyloric stenosis	15	28.97
Rectal and large intestinal atresia/stenosis	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	44	84.99
All defects	**249**	

DUBOIS	**2183**	
Atrial septal defect	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital cataract	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	5	22.90
Microcephalus	*	
Obstructive genitourinary defect	9	41.23
Patent ductus arteriosus	*	
Pyloric stenosis	7	32.07
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**47**	

ELKHART	**13452**	
Anencephalus	*	
Anophthalmia/microphthalmia	*	
Anotia/microtia	*	
Aortic valve stenosis	*	
Atrial septal defect	66	49.06
Atrioventricular septal defect	6	4.46
Autism	14	10.41
Choanal atresia	*	
Cleft lip with and without cleft palate	11	8.18
Cleft palate without cleft lip	9	6.69
Coarctation of aorta	6	4.46
Common truncus	*	
Congenital cataract	*	
Congenital hip dislocation	17	12.64
Diaphragmatic hernia	9	6.69
Down syndrome	14	10.41
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	6	4.46
Gastroschisis	*	
Hirschsprung's disease (congenital megacolon)	5	3.72
Hydrocephalus without Spina Bifida	8	5.95
Hypoplastic left heart syndrome	*	
Hypospadias	20	14.87
Microcephalus	17	12.64
Obstructive genitourinary defect	16	11.89
Patent ductus arteriosus	37	27.51
Pulmonary valve atresia and stenosis	18	13.38
Pyloric stenosis	37	27.51
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	5	3.72
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	9	6.69
Transposition of great arteries	5	3.72
Tricuspid valve atresia and stenosis	*	
Trisomy 13 (Patau syndrome)	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	52	38.66
All defects	**418**	

DEARBORN	**2271**	
Cleft lip with and without cleft palate	*	
Congenital hip dislocation	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Obstructive genitourinary defect	*	
Reduction deformity, upper limbs	*	
All defects	**9**	

FAYETTE	**1188**	
Atrial septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Down syndrome	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	*	
Microcephalus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**19**	

FLOYD	**3440**	
Atrial septal defect	7	20.35
Autism	5	14.53
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Hypospadias	8	23.26
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Reduction deformity, lower limbs	*	
Tetralogy of fallot	*	
Ventricular septal defect	13	37.79
All defects	**53**	

FRANKLIN	**1019**	
Atrial septal defect	*	
Cleft lip with and without cleft Palate	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Pulmonary valve atresia and stenosis	*	
All defects	**7**	

FOUNTAIN	**822**	
Atrial septal defect	5	60.83
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Congenital hip dislocation	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Reduction deformity, upper limbs	*	
Ventricular septal defect	*	
All defects	**25**	

GIBSON	**1695**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Congenital hip dislocation	*	
Down syndrome	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	5	29.50
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Ventricular septal defect	*	
All defects	**38**	

FULTON	**1021**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Cleft lip with and without cleft palate	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	5	48.97
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Renal agenesis/hypoplasia	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	5	48.97
All defects	**38**	

GRANT	**3247**	
Anencephalus	*	
Anophthalmia/microphthalmia	*	
Aortic valve stenosis	*	
Atrial septal defect	12	36.96
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Gastroschisis	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	10	30.80
Microcephalus	*	
Obstructive genitourinary defect	5	15.40
Patent ductus arteriosus	7	21.56
Pulmonary valve atresia and stenosis	8	24.64
Pyloric stenosis	6	18.48
Reduction deformity, lower limbs	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	11	33.88
All defects	**98**	

GREENE	**1582**	
Aortic valve stenosis	*	
Atrial septal defect	*	
Bladder exstrophy	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Ebstein anomaly	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hypoplastic left heart syndrome	*	
Hypospadias	5	31.61
Microcephalus	*	
Obstructive genitourinary defect	6	37.93
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Ventricular septal defect	5	31.61
All defects	**44**	

HANCOCK	**3450**	
Atrial septal defect	14	40.58
Atrioventricular septal defect	*	
Autism	6	17.39
Biliary atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	11	31.88
Microcephalus	*	
Obstructive genitourinary defect	11	31.88
Patent ductus arteriosus	9	26.09
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	7	20.29
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	10	28.99
All defects	**108**	

HAMILTON	**14677**	
Anencephalus	*	
Anophthalmia/microphthalmia	*	
Anotia/microtia	*	
Aortic valve stenosis	*	
Atrial septal defect	33	22.48
Atrioventricular septal defect	10	6.81
Autism	16	10.90
Biliary atresia	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	13	8.86
Cleft palate without cleft lip	*	
Coarctation of aorta	14	9.54
Common truncus	*	
Congenital cataract	*	
Congenital hip dislocation	14	9.54
Diaphragmatic hernia	5	3.41
Down syndrome	19	12.95
Encephalocele	*	
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	7	4.77
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	66	44.97
Microcephalus	*	
Obstructive genitourinary defect	71	48.38
Patent ductus arteriosus	27	18.40
Pulmonary valve atresia and stenosis	5	3.41
Pyloric stenosis	23	15.67
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	7	4.77
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	5	3.41
Tricuspid valve atresia and stenosis	*	
Trisomy 13 (Patau syndrome)	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	63	42.92
All defects	**457**	

HARRISON	**1776**	
Atrial septal defect	*	
Coarctation of aorta	*	
Down syndrome	*	
Hypospadias	*	
Microcephalus	*	
Renal agenesis/hypoplasia	*	
Ventricular septal defect	8	45.05
All defects	**18**	

HENDRICKS	**6342**	
Anophthalmia/microphthalmia	*	
Atrial septal defect	18	28.38
Atrioventricular septal defect	*	
Autism	*	
Biliary atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	5	7.88
Congenital cataract	*	
Congenital hip dislocation	5	7.88
Diaphragmatic hernia	*	
Down syndrome	7	11.04
Ebstein anomaly	*	
Encephalocele	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	17	26.81
Microcephalus	7	11.04
Obstructive genitourinary defect	13	20.50
Patent ductus arteriosus	19	29.96
Pulmonary valve atresia and stenosis	6	9.46
Pyloric stenosis	14	22.08
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	5	7.88
Ventricular septal defect	18	28.38
All defects	**164**	

HENRY	**2148**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypoplastic left heart syndrome	*	
Hypospadias	5	23.28
Microcephalus	*	
Obstructive genitourinary defect	7	32.59
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	5	23.28
Rectal and large intestinal atresia/stenosis	*	
Renal agenesis/hypoplasia	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	*	
All defects	**47**	

HUNTINGTON	**1889**	
Aortic valve stenosis	*	
Atrial septal defect	46	243.52
Atrioventricular septal defect	5	26.47
Autism	*	
Biliary atresia	*	
Cleft lip with and without cleft palate	5	26.47
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hypospadias	11	58.23
Microcephalus	7	37.06
Obstructive genitourinary defect	*	
Patent ductus arteriosus	6	31.76
Pulmonary valve atresia and stenosis	6	31.76
Pyloric stenosis	5	26.47
Rectal and large intestinal atresia/stenosis	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Ventricular septal defect	8	42.35
All defects	**123**	

HOWARD	**4551**	
Atrial septal defect	11	24.17
Atrioventricular septal defect	*	
Autism	6	13.18
Cleft lip with and without cleft palate	9	19.78
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Common truncus	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	6	13.18
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	14	30.76
Microcephalus	*	
Obstructive genitourinary defect	11	24.17
Patent ductus arteriosus	6	13.18
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	13	28.57
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 13 (Patau syndrome)	*	
Ventricular septal defect	11	24.17
All defects	**127**	

JASPER	**1757**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Gastroschisis	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	5	28.46
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Ventricular septal defect	*	
All defects	**37**	

JENNINGS	**1567**	
Atrial septal defect	5	31.91
Cleft lip with and without cleft palate	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Ebstein anomaly	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	7	44.67
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Spina bifida without anencephalus	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	*	
All defects	**36**	

JACKSON	**2363**	
Anencephalus	*	
Atrial septal defect	11	46.55
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	6	25.39
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	5	21.16
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	12	50.78
Rectal and large intestinal atresia/stenosis	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	8	33.86
All defects	**73**	

JAY	**1214**	
Atrial septal defect	9	74.14
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	5	41.19
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	6	49.42
All defects	**36**	

JOHNSON	**6974**	
Anophthalmia/microphthalmia	*	
Atrial septal defect	27	38.72
Atrioventricular septal defect	*	
Autism	18	25.81
Choanal atresia	*	
Cleft lip with and without cleft palate	5	7.17
Cleft palate without cleft lip	*	
Coarctation of aorta	6	8.60
Common truncus	*	
Congenital cataract	*	
Congenital hip dislocation	6	8.60
Diaphragmatic hernia	*	
Down syndrome	10	14.34
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Gastroschisis	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypoplastic left heart syndrome	*	
Hypospadias	20	28.68
Microcephalus	*	
Obstructive genitourinary defect	8	11.47
Patent ductus arteriosus	8	11.47
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	18	25.81
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	6	8.60
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Trisomy 13 (Patau syndrome)	*	
Ventricular septal defect	28	40.15
All defects	**205**	

JEFFERSON	**1472**	
Aortic valve stenosis	*	
Atrial septal defect	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Ventricular septal defect	*	
All defects	**23**	

KOSCIUSKO	**4374**	
Anencephalus	*	
Anophthalmia/microphthalmia	*	
Aortic valve stenosis	*	
Atrial septal defect	35	80.02
Atrioventricular septal defect	*	
Autism	5	11.43
Cleft lip with and without cleft palate	7	16
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital cataract	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	6	13.72
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	14	32.01
Microcephalus	5	11.43
Obstructive genitourinary defect	5	11.43
Patent ductus arteriosus	7	16
Pulmonary valve atresia and stenosis	6	13.72
Pyloric stenosis	15	34.29
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Tricuspid valve atresia and stenosis	*	
Trisomy 13 (Patau syndrome)	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	18	41.15
All defects	**148**	

KNOX	**1916**	
Anophthalmia/microphthalmia	*	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Down syndrome	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	5	26.10
All defects	**39**	

LAWRENCE	**2150**	
Aortic valve stenosis	*	
Atrial septal defect	6	27.91
Atrioventricular septal defect	*	
Cleft lip with and without cleft palate	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	9	41.86
Microcephalus	*	
Obstructive genitourinary defect	12	55.81
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	6	27.91
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	8	37.21
All defects	**65**	

LA GRANGE	2878	
Anotia/microtia	*	
Aortic valve stenosis	*	
Atrial septal defect	10	34.75
Atrioventricular septal defect	*	
Biliary atresia	*	
Coarctation of aorta	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Encephalocele	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	5	17.37
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	6	20.85
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	9	31.27
All defects	**60**	

LA PORTE	5356	
Atrial septal defect	26	48.54
Atrioventricular septal defect	*	
Autism	*	
Biliary atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	6	11.20
Congenital hip dislocation	5	9.34
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	9	16.80
Hypospadias	20	37.34
Microcephalus	6	11.20
Obstructive genitourinary defect	9	16.80
Patent ductus arteriosus	20	37.34
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	15	28.01
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 13 (Patau syndrome)	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	24	44.81
All defects	**175**	

MARION	**59613**	
Anencephalus	*	
Anophthalmia/microphthalmia	*	
Anotia/microtia	*	
Aortic valve stenosis	13	2.18
Atrial septal defect	202	33.89
Atrioventricular septal defect	29	4.86
Autism	49	8.22
Biliary atresia	11	1.85
Bladder exstrophy	*	
Choanal atresia	12	2.01
Cleft lip with and without cleft palate	53	8.89
Cleft palate without cleft lip	40	6.71
Coarctation of aorta	38	6.37
Common truncus	*	
Congenital cataract	5	0.84
Congenital hip dislocation	37	6.21
Diaphragmatic hernia	16	2.68
Down syndrome	73	12.25
Ebstein anomaly	5	0.84
Encephalocele	*	
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	16	2.68
Fetus or newborn affected by maternal alcohol use	16	2.68
Gastroschisis	*	
Hirschsprung's disease (congenital megacolon)	12	2.01
Hydrocephalus without Spina Bifida	37	6.21
Hypoplastic left heart syndrome	11	1.85
Hypospadias	177	29.69
Microcephalus	48	8.05
Obstructive genitourinary defect	148	24.83
Patent ductus arteriosus	135	22.65
Pulmonary valve atresia and stenosis	49	8.22
Pyloric stenosis	123	20.63
Rectal and large intestinal atresia/stenosis	27	4.53
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	14	2.35
Renal agenesis/hypoplasia	19	3.19
Spina bifida without anencephalus	20	3.35
Tetralogy of fallot	25	4.19
Transposition of great arteries	35	5.87
Tricuspid valve atresia and stenosis	5	0.84
Trisomy 13 (Patau syndrome)	8	1.34
Trisomy 18 (Edwards syndrome)	8	1.34
Ventricular septal defect	187	31.37
All defects	**1723**	

MARSHALL	**2686**	
Atrial septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	5	18.62
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Encephalocele	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	8	29.78
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	7	26.06
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	8	29.78
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**67**	

MARTIN	**498**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital cataract	*	
Hypospadias	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**13**	

MIAMI	**1811**	
Aortic valve stenosis	*	
Atrial septal defect	*	
Cleft palate without cleft lip	*	
Hypospadias	5	27.61
Microcephalus	*	
Obstructive genitourinary defect	5	27.61
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	5	27.61
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	*	
All defects	**39**	

MONTGOMERY	**1870**	
Atrial septal defect	5	26.74
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Ebstein anomaly	*	
Fetus or newborn affected by maternal alcohol use	*	
Hypoplastic left heart syndrome	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	5	26.74
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Transposition of great arteries	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	*	
All defects	**39**	

MONROE	**5100**	
Anophthalmia/microphthalmia	*	
Aortic valve stenosis	*	
Atrial septal defect	22	43.14
Atrioventricular septal defect	*	
Autism	*	
Bladder exstrophy	*	
Cleft lip with and without cleft palate	7	13.73
Cleft palate without cleft lip	6	11.76
Coarctation of aorta	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	5	9.80
Epispadius	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	20	39.22
Microcephalus	*	
Obstructive genitourinary defect	11	21.57
Patent ductus arteriosus	14	27.45
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	6	11.76
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Transposition of great arteries	*	
Ventricular septal defect	18	35.29
All defects	**140**	

NEWTON	**567**	
Anotia/microtia	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Down syndrome	*	
Hypospadias	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Ventricular septal defect	6	105.82
All defects	**18**	

MORGAN	**3462**	
Aortic valve stenosis	*	
Atrial septal defect	6	17.33
Atrioventricular septal defect	*	
Autism	*	
Biliary atresia	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	6	17.33
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	20	57.77
Microcephalus	*	
Obstructive genitourinary defect	6	17.33
Patent ductus arteriosus	5	14.44
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	10	28.89
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	11	31.77
All defects	**107**	

ORANGE	**969**	
Atrial septal defect	5	51.60
Atrioventricular septal defect	*	
Choanal atresia	*	
Congenital hip dislocation	*	
Down syndrome	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**24**	

NOBLE	**2860**	
Aortic valve stenosis	*	
Atrial septal defect	18	62.94
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	6	20.98
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital cataract	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	6	20.98
Microcephalus	5	17.48
Obstructive genitourinary defect	*	
Patent ductus arteriosus	6	20.98
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	7	24.48
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	14	48.95
All defects	**105**	

OWEN	**977**	
Atrial septal defect	6	61.41
Atrioventricular septal defect	*	
Cleft lip with and without cleft palate	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Pyloric stenosis	7	71.65
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Ventricular septal defect	*	
All defects	**33**	

OHIO	**247**	
	*	

PORTER	**7314**	
Aniridia	*	
Anotia/microtia	*	
Aortic valve stenosis	*	
Atrial septal defect	5	6.84
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	9	12.31
Coarctation of aorta	6	8.20
Congenital cataract	*	
Congenital hip dislocation	*	
Down syndrome	12	16.41
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	19	25.98
Microcephalus	*	
Obstructive genitourinary defect	12	16.41
Patent ductus arteriosus	7	9.57
Pulmonary valve atresia and stenosis	6	8.20
Pyloric stenosis	23	31.45
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Trisomy 13 (Patau syndrome)	*	
Ventricular septal defect	21	28.71
All defects	**168**	

PARKE	**741**	
Atrial septal defect	*	
Choanal atresia	*	
Down syndrome	*	
Ebstein anomaly	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Spina bifida without anencephalus	*	
Ventricular septal defect	*	
All defects	**13**	

PERRY	**905**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Down syndrome	*	
Gastroschisis	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Ventricular septal defect	*	
All defects	**14**	

PIKE	**619**	
Encephalocele	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	6	96.93
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**26**	

PULASKI	**669**	
Atrial septal defect	*	
Cleft lip with and without cleft palate	*	
Congenital hip dislocation	*	
Hypospadias	*	
Microcephalus	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Ventricular septal defect	*	
All defects	**18**	

POSEY	**1013**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Down syndrome	*	
Epispadius	*	
Hypoplastic left heart syndrome	*	
Hypospadias	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Transposition of great arteries	*	
Trisomy 13 (Patau syndrome)	*	
Ventricular septal defect	*	
All defects	**19**	

PUTNAM	**1581**	
Atrial septal defect	6	37.95
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Down syndrome	5	31.63
Ebstein anomaly	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	*	
All defects	**47**	

RANDOLPH	**1214**	
Aortic valve stenosis	*	
Atrial septal defect	6	49.42
Biliary atresia	*	
Cleft palate without cleft lip	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	6	49.42
Ventricular septal defect	5	41.19
All defects	**26**	

RIPLEY	**1539**	
Aortic valve stenosis	*	
Atrial septal defect	*	
Cleft palate without cleft lip	*	
Congenital hip dislocation	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Spina bifida without anencephalus	*	
Ventricular septal defect	*	
All defects	**21**	

RUSH	**849**	
Aortic valve stenosis	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Encephalocele	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	5	58.89
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**24**	

SCOTT	**1238**	
Atrial septal defect	6	48.47
Autism	*	
Ebstein anomaly	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Ventricular septal defect	5	40.39
All defects	**25**	

ST. JOSEPH	15362	
Anencephalus	*	
Aniridia	*	
Anophthalmia/microphthalmia	*	
Anotia/microtia	*	
Aortic valve stenosis	*	
Atrial septal defect	51	33.20
Atrioventricular septal defect	9	5.86
Autism	10	6.51
Choanal atresia	*	
Cleft lip with and without cleft palate	14	9.11
Cleft palate without cleft lip	14	9.11
Coarctation of aorta	*	
Common truncus	*	
Congenital cataract	*	
Congenital hip dislocation	10	6.51
Diaphragmatic hernia	*	
Down syndrome	24	15.62
Ebstein anomaly	*	
Encephalocele	*	
Esophageal atresia/tracheoesophageal fistula	6	3.91
Fetus or newborn affected by maternal alcohol use	5	3.25
Gastroschisis	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	17	11.07
Hypoplastic left heart syndrome	5	3.25
Hypospadias	34	22.13
Microcephalus	13	8.46
Obstructive genitourinary defect	21	13.67
Patent ductus arteriosus	55	35.80
Pulmonary valve atresia and stenosis	11	7.16
Pyloric stenosis	21	13.67
Rectal and large intestinal atresia/stenosis	6	3.91
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	8	5.21
Spina bifida without anencephalus	*	
Tetralogy of fallot	8	5.21
Transposition of great arteries	6	3.91
Tricuspid valve atresia and stenosis	*	
Trisomy 13 (Patau syndrome)	*	
Trisomy 18 (Edwards syndrome)	5	3.25
Ventricular septal defect	61	39.71
All defects	**455**	

SHELBY	2161	
Aortic valve stenosis	*	
Atrial septal defect	12	55.53
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	6	27.76
Microcephalus	*	
Obstructive genitourinary defect	6	27.76
Patent ductus arteriosus	5	23.14
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Ventricular septal defect	14	64.78
All defects	**82**	

STARKE	1143	
Aortic valve stenosis	*	
Atrial septal defect	*	
Autism	*	
Fetus or newborn affected by maternal alcohol use	*	
Hypoplastic left heart syndrome	*	
Hypospadias	5	43.74
Obstructive genitourinary defect	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	7	61.24
All defects	**34**	

SPENCER	**932**	
Atrial septal defect	*	
Cleft lip with and without cleft palate	*	
Diaphragmatic hernia	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Reduction deformity, upper limbs	*	
Tricuspid valve atresia and stenosis	*	
Ventricular septal defect	*	
All defects	**20**	

STEUBEN	**1661**	
Aortic valve stenosis	*	
Atrial septal defect	11	66.23
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Diaphragmatic hernia	*	
Down syndrome	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	8	48.16
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	8	48.16
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	9	54.18
All defects	**64**	

SWITZERLAND	**451**	
	*	

SULLIVAN	**930**	
Atrial septal defect	*	
Autism	*	
Cleft palate without cleft lip	*	
Down syndrome	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	5	53.76
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Tetralogy of fallot	*	
Ventricular septal defect	*	
All defects	**29**	

TIPPECANOE	**8352**	
Aortic valve stenosis	*	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	6	7.18
Cleft palate without cleft lip	*	
Coarctation of aorta	8	9.58
Common truncus	*	
Congenital cataract	*	
Congenital hip dislocation	*	
Diaphragmatic hernia	*	
Down syndrome	13	15.57
Ebstein anomaly	*	
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	22	26.34
Microcephalus	5	5.99
Obstructive genitourinary defect	24	28.74
Patent ductus arteriosus	18	21.55
Pulmonary valve atresia and stenosis	12	14.37
Pyloric stenosis	16	19.16
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	5	5.99
Trisomy 13 (Patau syndrome)	*	
Ventricular septal defect	42	50.29
All defects	**238**	

TIPTON	**764**	
Atrial septal defect	*	
Biliary atresia	*	
Coarctation of aorta	*	
Down syndrome	*	
Hypoplastic left heart syndrome	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**18**	

VIGO	**5246**	
Anencephalus	*	
Aortic valve stenosis	*	
Atrial septal defect	13	24.78
Atrioventricular septal defect	5	9.53
Autism	10	19.06
Biliary atresia	*	
Bladder exstrophy	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital cataract	*	
Congenital hip dislocation	5	9.53
Down syndrome	8	15.25
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	7	13.34
Microcephalus	8	15.25
Obstructive genitourinary defect	13	24.78
Patent ductus arteriosus	9	17.16
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	19	36.22
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	21	40.03
All defects	**153**	

UNION	**276**	
	*	

VANDERBURGH	**9658**	
Anencephalus	*	
Anophthalmia/microphthalmia	*	
Anotia/microtia	*	
Aortic valve stenosis	*	
Atrial septal defect	16	16.57
Atrioventricular septal defect	6	6.21
Biliary atresia	*	
Bladder exstrophy	*	
Cleft lip with and without cleft palate	7	7.25
Cleft palate without cleft lip	6	6.21
Coarctation of aorta	10	10.35
Congenital hip dislocation	*	
Down syndrome	9	9.32
Ebstein anomaly	*	
Encephalocele	*	
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	*	
Gastroschisis	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	27	27.96
Microcephalus	5	5.18
Obstructive genitourinary defect	16	16.57
Patent ductus arteriosus	14	14.50
Pulmonary valve atresia and stenosis	9	9.32
Pyloric stenosis	28	28.99
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, lower limbs	*	
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	5	5.18
Spina bifida without anencephalus	5	5.18
Tetralogy of fallot	*	
Transposition of great arteries	*	
Trisomy 13 (Patau syndrome)	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	34	35.20
All defects	**239**	

VERMILLION	**777**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Autism	*	
Down syndrome	*	
Hirschsprung's disease (congenital megacolon)	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Reduction deformity, upper limbs	*	
Spina bifida without anencephalus	*	
Ventricular septal defect	*	
All defects	**21**	

WABASH	**1524**	
Aortic valve stenosis	*	
Atrial septal defect	11	72.18
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Common truncus	*	
Congenital hip dislocation	*	
Down syndrome	*	
Epispadius	*	
Esophageal atresia/tracheoesophageal fistula	*	
Fetus or newborn affected by maternal alcohol use	*	
Hypoplastic left heart syndrome	*	
Hypospadias	7	45.93
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	5	32.81
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	5	32.81
Renal agenesis/hypoplasia	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	11	72.18
All defects	**66**	

WARREN	**354**	
Atrial septal defect	*	
Autism	*	
Down syndrome	*	
Hypospadias	*	
Patent ductus arteriosus	*	
Transposition of great arteries	*	
Ventricular septal defect	5	141.24
All defects	**13**	

WASHINGTON	**1380**	
Atrial septal defect	*	
Cleft lip with and without cleft palate	*	
Hypospadias	*	
Patent ductus arteriosus	*	
Tetralogy of fallot	*	
Ventricular septal defect	*	
All defects	**10**	

WAYNE	**3565**	
Aortic valve stenosis	*	
Atrial septal defect	6	16.83
Atrioventricular septal defect	*	
Autism	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Down syndrome	*	
Ebstein anomaly	*	
Esophageal atresia/tracheoesophageal fistula	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	7	19.64
Patent ductus arteriosus	5	14.03
Pulmonary valve atresia and stenosis	5	14.03
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Renal agenesis/hypoplasia	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	8	22.44
All defects	**69**	

WARRICK	**2646**	
Atrial septal defect	*	
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Down syndrome	*	
Encephalocele	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	14	52.91
Obstructive genitourinary defect	6	22.68
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	5	18.90
Reduction deformity, upper limbs	*	
Renal agenesis/hypoplasia	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	9	34.01
All defects	**59**	

WHITE	**1298**	
Atrial septal defect	8	61.63
Atrioventricular septal defect	*	
Coarctation of aorta	*	
Hydrocephalus without Spina Bifida	*	
Hypospadias	*	
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	6	46.22
Spina bifida without anencephalus	*	
Transposition of great arteries	*	
Ventricular septal defect	*	
All defects	**36**	

WELLS	**1423**	
Atrial septal defect	21	147.58
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Coarctation of aorta	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hirschsprung's disease (congenital megacolon)	*	
Hydrocephalus without Spina Bifida	*	
Hypoplastic left heart syndrome	*	
Hypospadias	8	56.22
Microcephalus	*	
Obstructive genitourinary defect	*	
Patent ductus arteriosus	7	49.19
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Rectal and large intestinal atresia/stenosis	*	
Spina bifida without anencephalus	*	
Tetralogy of fallot	*	
Trisomy 18 (Edwards syndrome)	*	
Ventricular septal defect	15	105.41
All defects	**81**	

WHITLEY	**1593**	
Atrial septal defect	11	69.05
Atrioventricular septal defect	*	
Autism	*	
Choanal atresia	*	
Cleft lip with and without cleft palate	*	
Cleft palate without cleft lip	*	
Coarctation of aorta	*	
Congenital hip dislocation	*	
Down syndrome	*	
Fetus or newborn affected by maternal alcohol use	*	
Hypospadias	9	56.50
Obstructive genitourinary defect	*	
Patent ductus arteriosus	*	
Pulmonary valve atresia and stenosis	*	
Pyloric stenosis	*	
Reduction deformity, upper limbs	*	
Tetralogy of fallot	*	
Transposition of great arteries	*	
Ventricular septal defect	10	62.77
All defects	**59**	